

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
3 June 2004 (03.06.2004)

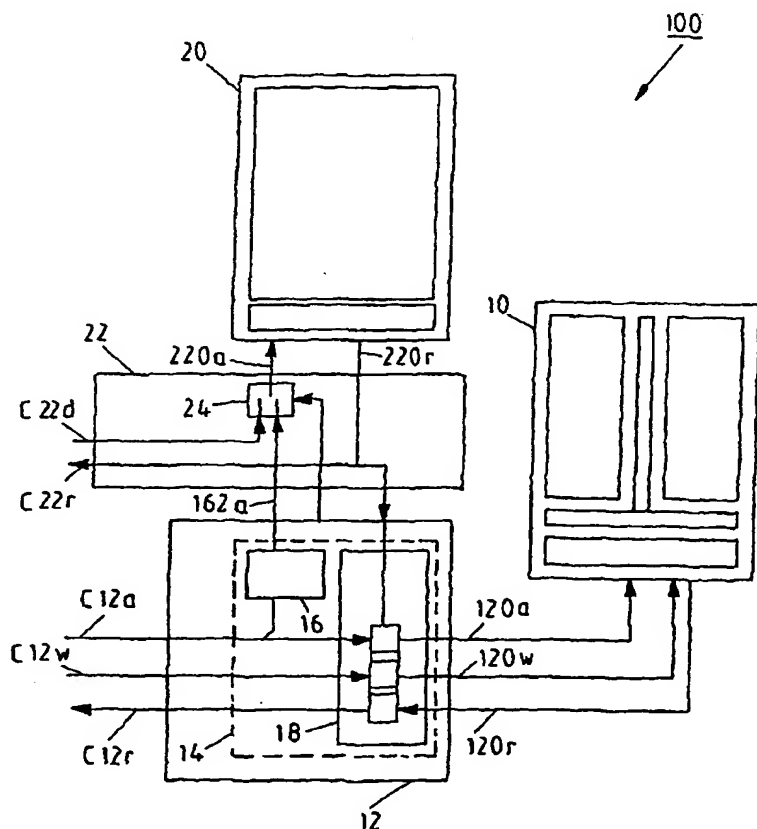
PCT

(10) International Publication Number  
**WO 2004/046935 A3**

- (51) International Patent Classification<sup>7</sup>: **G06F 1/00**
- (21) International Application Number:  
PCT/IB2003/005209
- (22) International Filing Date:  
14 November 2003 (14.11.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
102 54 320.8 21 November 2002 (21.11.2002) DE
- (71) Applicant (for DE only): **PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH** [DE/DE]; Stein-  
damm 94, 20099 Hamburg (DE).
- (71) Applicant (for all designated States except DE, US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.**  
[NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven  
(NL).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **BUHR, Wolfgang**  
[DE/DE]; c/o Philips Intellectual Property & Standards  
GmbH, Weisshausstr. 2, 52066 Aachen (DE).
- (74) Agent: **MEYER, Michael**; Philips Intellectual Property &  
Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

[Continued on next page]

(54) Title: **CIRCUIT ARRANGEMENT WITH NON-VOLATILE MEMORY MODULE AND METHOD OF EN-/DECRYPTING DATA IN THE NON-VOLATILE MEMORY MODULE**



(57) Abstract: In order further to develop a circuit arrangement (100) for electronic data processing - having at least one non-volatile memory module (10) for storing data to be protected against unauthorized access by means of encryption or decryption - having at least one code R'ead! O'nly!M'emory! module (20) for storing and/or supplying at least one R'ead!O'nly!M'emory! code; and - having at least one code ROM module interface logic circuit (22) assigned to the code ROM module (20) and an en-/decryption method based thereon in such a way that on the one hand the key code may be changed for different controller versions with different ROM codes and on the other hand the length of the key code is not limited, it is proposed that the data assigned to the memory module (10) be encrypted or decrypted by means of the ROM code supplied by the code ROM module (20).



ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:  
17 March 2005

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/05209

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G06F1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|------------|---|-----------------------|
| X          | EP 0 330 404 A (FUJITSU LTD)<br>30 August 1989 (1989-08-30)<br>column 1, line 1 - line 47<br>column 3, line 4 - column 9, line 41                           | 1-8, 10               |
| Y          | -----   | 9                     |
| X          | US 2002/099948 A1 (KOCHER PAUL C ET AL)<br>25 July 2002 (2002-07-25)<br>paragraph '0033! - paragraph '0038!<br>paragraph '0050! - paragraph '0077!          | 5, 6, 8, 10           |
| A          | -----   | 1, 2, 4               |
| Y          | EP 1 022 659 A (PHILIPS CORP INTELLECTUAL<br>PTY ; KONINKL PHILIPS ELECTRONICS NV (NL))<br>26 July 2000 (2000-07-26)<br>paragraph '0003! - paragraph '0013! | 9                     |
| A          | -----   | 1, 6                  |
|            | -/--  |                       |

☒ Further documents are listed in the<sup>1</sup> continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*S\* document member of the same patent family

Date of the actual completion of the international search

22 December 2004

Date of mailing of the international search report

04/01/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Pinto, R.M.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/05209

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages                                 | Relevant to claim No. |
|------------|--|-----------------------|
| A          | <p>US 2001/015919 A1 (KEAN THOMAS A)<br/> 23 August 2001 (2001-08-23)<br/> paragraph '0009! - paragraph '0025!</p> | <p>1-4,6-10</p>       |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 03/05209

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|----|---------------------|----------------------------|---------------------|
| EP 0330404                                | A  | 30-08-1989          | JP 1213711 A               | 28-08-1989          |
|   |    |                     | JP 2534532 B2              | 18-09-1996          |
|   |    |                     | JP 2005158 A               | 10-01-1990          |
|   |    |                     | DE 68919483 D1             | 12-01-1995          |
|   |    |                     | EP 0330404 A2              | 30-08-1989          |
|   |    |                     | ES 2064432 T3              | 01-02-1995          |
|   |    |                     | US 4985920 A               | 15-01-1991          |
| US 2002099948                             | A1 | 25-07-2002          | US 6289455 B1              | 11-09-2001          |
|   |    |                     | US 2004111631 A1           | 10-06-2004          |
|   |    |                     | AU 4852600 A               | 26-03-2001          |
|   |    |                     | CA 2384012 A1              | 08-03-2001          |
|   |    |                     | EP 1208667 A1              | 29-05-2002          |
|   |    |                     | JP 2003529963 T            | 07-10-2003          |
|   |    |                     | WO 0117163 A1              | 08-03-2001          |
|   |    |                     | ZA 200201867 A             | 06-03-2003          |
| EP 1022659                                | A  | 26-07-2000          | DE 19901829 A1             | 20-07-2000          |
|   |    |                     | EP 1022659 A2              | 26-07-2000          |
|   |    |                     | JP 2000235523 A            | 29-08-2000          |
|   |    |                     | US 6735697 B1              | 11-05-2004          |
| US 2001015919                             | A1 | 23-08-2001          | EP 1124330 A2              | 16-08-2001          |
|   |    |                     | US 2001037458 A1           | 01-11-2001          |
|   |    |                     | AU 2209301 A               | 03-07-2001          |
|   |    |                     | WO 0146810 A1              | 28-06-2001          |
|   |    |                     | GB 2375418 A , B           | 13-11-2002          |